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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,695	02/20/2004	Susumu Sasaki	501-43506X00	3683

20457 7590 01/26/2006

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EXAMINER	
WON, BUMSUK	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/781,695	SASAKI ET AL.	
	Examiner	Art Unit	
	Bumsuk Won	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: Display device having a connecting portion of cathode and electron source with conductor and insulator.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeng (US 5,772,485) in view of Yanagisawa (US 2002/0151247).

Regarding claim 1, Jeng discloses a display device (figure 1) comprising: a face substrate (26) which forms anodes (28) and phosphors (24) on an inner surface thereof;

a plurality of cathode lines (16) which extend in one direction and are arranged in parallel in another direction which crosses one direction; a plurality of electron sources (14) which are arranged on the cathode lines in an electrically conductive manner (column 4, lines 47-52); control electrodes (22) which face the cathode lines in a display region (not referenced) and have electron passing apertures (34) for allowing electrons from the electron sources to pass through the electron passing apertures to the face substrate side (column 4, lines 52-56); a back substrate (18) which forms the control electrodes and the cathode lines on an inner surface thereof and faces the face substrate in an opposed manner with a given distance therebetween (figure 1); a support body (36) which is interposed between the face substrate and the back substrate in a state that the support body surrounds the display region and holds the given distance (figure 1); and a sealing material (column 4, lines 44-46) which hermetically seals end faces of the support body and the face substrate and the back substrate respectively.

Jeng does not discloses a connecting portion of the cathode line with the electron source has a composition which includes a conductor and an insulator, and the composition is determined such that an occupancy rate of the conductor is set equal to or more than an occupancy rate of the insulator.

Yanagisawa discloses a connecting portion (figure, 8, not referenced, part of cathode line (107) where electron source (102) is disposed on) of the cathode line (107) with the electron source (102) has a composition which includes a conductor (paragraph 156, "silver particles") and an insulator ("glass frit (about 2%), ethyl cellulose base resin

binder (about 2%), and organic solvent (about 18%)"), and the composition is determined such that an occupancy rate of the conductor is set equal to or more than an occupancy rate of the insulator (paragraph 156), for the purpose of having better conductivity.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a connecting portion of the cathode line with the electron source has a composition which includes a conductor and an insulator, and the composition is determined such that an occupancy rate of the conductor is set equal to or more than an occupancy rate of the insulator disclosed by Yanagisawa in the display panel disclosed by Jeng, for the purpose of having better conductivity.

Regarding claim 2, Yanagisawa discloses the occupancy rate of the insulator is less than 50% (paragraph 156). The reason for combining is the same as for claim 1 above.

Regarding claim 4, Jeng discloses a display device (figure 1) comprising: a face substrate (26) which forms anodes (28) and phosphors (24) on an inner surface thereof; a plurality of cathode lines (16) which extend in one direction and are arranged in parallel in another direction which crosses one direction; a plurality of electron sources (14) which are arranged on the cathode lines in an electrically conductive manner (column 4, lines 47-52); control electrodes (22) which face the cathode lines in a display region (not referenced) and have electron passing apertures (34) for allowing

electrons from the electron sources to pass through the electron passing apertures to the face substrate side (column 4, lines 52-56); a back substrate (18) which forms the control electrodes and the cathode lines on an inner surface thereof and faces the face substrate in an opposed manner with a given distance therebetween (figure 1); a support body (36) which is interposed between the face substrate and the back substrate in a state that the support body surrounds the display region and holds the given distance (figure 1); and a sealing material (column 4, lines 44-46) which hermetically seals end faces of the support body and the face substrate and the back substrate respectively.

Jeng does not disclose a layer in which an occupancy rate of a conductor is high is interposed in a connecting portion between the cathode line and the electron source.

Yanagisawa discloses a layer (figure, 8, not referenced, part of cathode line (107) where electron source (102) is disposed on) in which an occupancy rate of a conductor (paragraph 156) is high is interposed in a connecting portion between the cathode line (107) and the electron source (102). The reason for combining is the same as for claim 1 above.

Regarding claim 5, Yanagisawa discloses the layer is a silver particle layer (paragraph 156). The reason for combining is the same as for claim 1 above.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jeng (US 5,772,485) in view of Yanagisawa (US 2002/0151247), in further view of Nakamura (JP 62061028).

Regarding claim 3, Jeng in view of Yanagisawa discloses all of the claimed limitations except for a surface of the back substrate in the vicinity of the cathode lines exhibits an uneven shape.

Nakamura discloses a surface of the back substrate and surfaces of other layers exhibit uneven shape (abstract), for the purpose having better adhering strength.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a surface of the back substrate and surfaces of other layers exhibit uneven shape disclosed by Nakamura in the display device disclosed by Jeng in view of Yanagisawa for the purpose having better adhering strength.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bumsuk Won whose telephone number is 571-272-2713. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bumsuk Won
Patent Examiner

JOSEPH WILLIAMS
PRIMARY EXAMINER